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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/329,889	06/10/1999	STEPHANE BOUSSAC	005974/00011	8734

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200 PARK AVENUE  
NEW YORK, NY 10166

EXAMINER
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THANGAVELU, KANDASAMY

ART UNIT	PAPER NUMBER
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2123

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DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/329,889

Applicant(s)

BOUSSAC ET AL.

Examiner

Kandasamy Thangavelu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on January 16, 200.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 25,28,30,31,33,35,36 and 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25,28,30,31,33,35,36 and 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Introduction***

1. This communication is in response to the Applicants' Amendment dated January 16, 2004. Claims 25, 31, 35 and 36 were amended. Claims 27 and 34 were cancelled. Claims 25, 28, 30-31, 33, 35-36 and 38 of the application are pending. This office action is made non-final, in response to request for continued examination.

### ***Response to Arguments***

2. Applicants' arguments filed on January 16, 2004 have been fully considered. Applicants' arguments with respect to claim rejections under 35 U.S.C. 112 First Paragraph are not persuasive, as discussed in Paragraph 7 below. Therefore, claim rejections under 35 U.S.C. 112 First Paragraph are maintained.

### ***Drawings***

3. The drawings are objected to; see a copy of Form PTO-948 sent with Paper No. 8, for an explanation. Applicants are requested to send formal drawings in reply to this Office action.

### ***Claim Rejections - 35 USC § 112***

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4. The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 25, 28, 30-31, 33, 35-36 and 38 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

5.1 Claim 25 states “said second zone representing a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position”. This is new material added in the amendment and is a new definition of the second zone having no support in the original application as filed.

Claim 31 states “said half sphere extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position”. This is new material added in the amendment and is a new definition of the second zone having no support in the original application as filed.

Claim 35 states “said half sphere extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position”. This is new material added in the amendment and is a new definition of the second zone having no support in the original application as filed.

Claim 36 states “said half circle extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position”. This is new material added in the amendment and is a new definition of the second zone having no support in the original application as filed.

The Applicants have added the terms first zone, second zone and their varied definitions in the amendments but they do not have any support in the original specification as filed.

5.2 The claims not rejected directly are rejected because of their dependence on the rejected claims.

6. Claims 25, 28, 30-31, 33, 35-36 and 38 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

6.1 Claim 25 includes the following limitations in-part:

(ii) determining a subset of the triangles such that each triangle in said subset has a trajectory through its corresponding **second zone** during motion of the modeled object from a preceding position to a current position and from the current position to a next position; and where:

each such **triangle's second zone comprises a zone represented by a half sphere**, said half sphere comprising a flat face that is planar with said triangle and

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**said half sphere extending interior to the modeled object; and**

**said second zone representing a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position [emphasis added];**

and

constructing a representation of the swept volume from the generated traces of the motion of said subset of edges,

wherein constructing a representation of the swept volume further comprises bounding the swept volume at each of said current positions in the series by said subset of triangles associated with each such current position.

The concept of bounding the swept volume at each of the current positions in the series by said subset of triangles associated with each such current position is understood. However, the concept of **a triangle in the subset having a trajectory through its corresponding second zone** during motion of the modeled object from a preceding position to a current position and from the current position to a next position; and where:

**each such triangle's second zone comprises a zone represented by a half sphere,**

**the half sphere comprising a flat face that is planar with the triangle and**

**the half sphere extending interior to the modeled object; and**

**the second zone representing a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at the preceding position is conceptually impossible and appears to be incorrect. How the triangle will execute such**

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trajectory **through a second zone represented by a half sphere extending interior to the modeled object** during its motion has not been properly explained in the specification. It is impossible to understand how a triangle will execute a trajectory **through a half sphere extending interior to the modeled object** and be part of the boundary of the swept volume. For example, when a triangle is rotated about an axis the ends of the triangle produce cones, which are not entirely within the material of the object. The applicants have failed to provide proper explanation in the specification making it impossible for one of ordinary skill in the art to make and use the system.

6.2 Claim 31 includes the following limitations in-part:

(ii) a subset of the triangles is determined such that each triangle in said subset has a **trajectory through its corresponding second zone** during motion of the modeled object from a preceding position to a current position and from the current position to a next position and where **each such triangle's second zone comprises a zone represented by a half sphere**, said half sphere comprising a flat face that is planar with said triangle and **said half sphere extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position** [emphasis added];

and

(d) a representation of the swept volume is constructed from the traces of the subset of edges, and bounded at each of said current positions in said series by said subset of triangles associated with each such current position.

The concept of bounding the swept volume at each of the current positions in the series by said subset of triangles associated with each such current position is understood. However, the concept of **a triangle in the subset having a trajectory through a second zone** during motion of the modeled object from a preceding position to a current position or from the current position to a next position, where such triangle's **second zone comprises a zone represented by a half sphere**, the half sphere comprising a flat face that is planar with the triangle and **the half sphere extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at the preceding position** is conceptually impossible and appears to be incorrect. How the polygon will execute such trajectory **through a second zone represented by a half sphere extending interior to a space** during its motion has not been properly explained in the specification. It is impossible to understand how a triangle will execute a trajectory **through a half sphere extending interior to a space** and be part of the boundary of the swept volume. For example, when a triangle is rotated about an axis the ends of the triangle produce cones, which are not entirely within the material of the object. The applicants have failed to provide proper explanation in the specification making it impossible for one of ordinary skill in the art to make and use the system.

6.3 Claim 35 includes the following limitations in-part:

- (ii) determine a subset of the triangles such that each triangle in said subset has a trajectory through its corresponding **second zone** during motion of the modeled object from a preceding position to a current position and from the current position to a next



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position where **each such triangle's second zone comprises a zone represented by a half sphere**, said half sphere comprising a flat face that is planar with said triangle and said **half sphere extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position** [emphasis added];

and

(d) construct a representation of the swept volume from the traces of the subset of edges, and bounded at each of said current positions in said series by said subset of triangles associated with each such current position.

The concept of bounding the swept volume at each of the current positions in the series by said subset of triangles associated with each such current position is understood. However, the concept of **each triangle in the subset having a trajectory through its corresponding second zone** during motion of the modeled object from a preceding position to a current position or from the current position to a next position, where such **triangle's second zone comprises a zone represented by a half sphere**, the half sphere comprising a flat face that is planar with the triangle and **half sphere extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position** is conceptually impossible and appears to be incorrect. How the triangle will execute such trajectory **through a second zone represented by a half sphere extending interior to a space** during its motion has not been properly explained in the specification. It is impossible to understand how a triangle will execute a trajectory **through a half sphere extending interior to**

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**a space** and be part of the boundary of the swept volume. For example, when a triangle is rotated about an axis the ends of the triangle produce cones, which are not entirely within the material of the object. The applicants have failed to provide proper explanation in the specification making it impossible for one of ordinary skill in the art to make and use the system.

6.4 Claim 36 includes the following limitations in-part:

(ii) determining a subset of the edges such that each edge in said subset has a trajectory through its corresponding **second zone** during motion of the modeled object from a preceding position to a current position and from the current position to a next position and where **each such edge's second zone comprises a material zone represented by a half circle**, said half circle comprising a flat face that is aligned along said edge, said edge being elements of a tessellated representation of modeled real-world object, and said **half circle extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position** [emphasis added];

and

(d) constructing a representation of the swept volume from the generated traces of the motion of said subset of vertices and edges.

The concept of constructing a representation of the swept volume from the generated traces of the motion of the subset of vertices and edges is understood. However, the concept of **each edge in the subset having a trajectory through its corresponding second zone** during

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motion of the modeled object from a preceding position to a current position or from the current position to a next position, where such edge's **second zone comprises a zone represented by a half circle**, the half circle comprising a flat face that is aligned along the edge and **the half circle extending interior to a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position** is conceptually impossible and appears to be incorrect. How the edge will execute such trajectory **through a second zone represented by a half circle extending interior to a space** during its motion has not been properly explained in the specification. It is impossible to understand how an edge will execute a trajectory **through a half circle extending interior to a space** and be part of the boundary of the swept volume. For example, when an edge is rotated about an axis the ends of the edge produce a circle, which are not entirely within the material of the object. The applicants have failed to provide proper explanation in the specification making it impossible for one of ordinary skill in the art to make and use the system.

6.5 The claims not rejected directly are rejected because of their dependence on the rejected claims.

### ***Arguments***

7.1 As per the applicants' argument that "based on a further review of specification and claims, applicant believes there may be some confusion regarding the use of the term "polygon" and that this confusion has resulted in the Examiner's inability to understand how a polygon will

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execute a trajectory through a half sphere extending interior to a modeled object and be part of the boundary of the swept volume”, the examiner respectfully disagrees. The Examiner takes the position that the Applicants’ statement that a polygon or a triangle will execute a trajectory through a second zone comprising a half sphere extending interior to the modeled object is incorrect. The Applicants are arguing a case which appears to be impossible to occur.

7.2 As per the applicants’ argument that “the edges and the triangles do not actually enter in the object or in a material zone but rather enter a representation of a virtual zone occupied by the object at its preceding position(that is disclosed in the specification as, for example, the zone shown in black on Figure 7) ... a triangle or edge following its trajectory, passes through said zone, that the second zone is not part of the object itself, but is a space having particular positional relationship to a position of the object”, the Examiner takes the position that the Applicants’ definition of the virtual zone or second zone is incorrect. The Applicants are arguing a case which appears to be impossible to occur.

7.3 As per the applicants’ argument that “the specification does indicate how polygons (in particular, triangles) forming the tessellated representation execute a trajectory through the second zone, where the zone has a positional relationship as described ... in the amended claims”, the Examiner respectfully disagrees. The examiner takes the position that the specification does not describe how the polygons or triangles execute a trajectory through the second zone represented by a half sphere extending interior to the modeled object.

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7.4 As per the applicants' argument that "the second zone represents a space that had been occupied by at least a portion of the modeled object, when the modeled object was positioned at the said preceding position ... the claims do not require that the triangles move within the object per se, but merely within the certain spaces having positional relationships to the object at certain defined positions", the Examiner takes the position that this is a new definition of the second zone having no support in the original application as filed. The Examiner takes the position that this new definition of the second zone does cure the deficiency in the definition of the swept volume based on the triangles moving through the second zone.

7.5 U. S. Patent 6,099,573, a previously provided reference shows in Figure 5 that a cone is generated when a triangle is rotated.

7.6  
7/5

AB Applicants are encouraged to attempt to clear the questions regarding the viability of a second zone comprising a half sphere and a half circle, by appearing for a personal interview at the U.S. Patent and Trademark Office with some type of demonstration of the swept volume that they are claiming.

### **Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is


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703-305-0043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu  
Art Unit 2123  
February 28, 2004

  
**SAMUEL BRODA, ESQ.**  
**PRIMARY EXAMINER**